PATENT ABSTRACTS OF JAPAN

(54) **EVENT MANAGEMENT SYSTEM IN NETWORK SYSTEM**

(57)Abstract:
PURPOSE: To provide the event management system of the network system which provides association among clients in real time by reducing the overhead of a process by a control system.
CONSTITUTION: A server S and a monitor terminal 11, an office terminal 12, and an alarm terminal 13 as clients are connected through a network N. If the monitor terminal 11 detects abnormality of a facility equipment, its abnormal equipment number is regarded as an event code and the addresses of the office terminal 12 and warning terminal 13 at transfer destinations are added and sent to the server S, which requests a logging processing part 10b to record the occurrence time, association terminals, etc., and transfers the event code to the terminals 12 and 13 at the transfer destinations. The respective terminals acquires the process corresponding to the event code by referring to event code definition files 12b and 13b and performs the process.
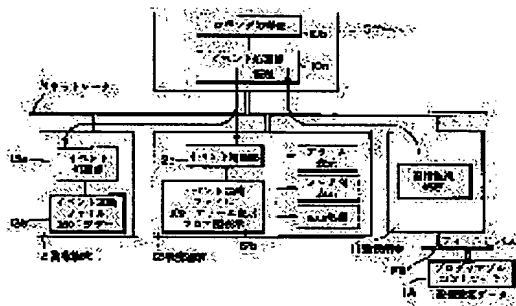
CLAIMS

[Claim(s)]
[Claim 1] The event management method in the network system characterized by two or more clients abstracting as an event the information generated in each client, and the data accompanying activation of the processing in the network system connected to the server through the network, bundling up an event by the client and server which constitute a system,

and making it manage.

[Claim 2] It is an event management method in the network system characterized by transmitting an event to the destination client which the information generated in each client and the data accompanying activation of the processing were abstracted as an event in the network system by which two or more clients were connected to the server through the network, and each client added destination data to the event to generate, transmitted to said server, and was specified by the server concerned.

[Claim 3] Each client is an event management method in the network system according to claim 1 or 2 characterized by performing processing defined as analyzing an event at the time of a carrier beam in the transfer of the event from a server.

[Detailed Description of the Invention]

[0001]

[Industrial Application] This invention relates to the event management method in the network system which manages the abnormality information and employment information which are generated by the system used as a controlled system in for example, the factory automation FA and process automation PA.

[0002]

[Description of the Prior Art] Usually, with control systems, such as a factory automation FA and process automation PA, the data of the various crises which exist in the site used as a controlled system are collected, and it is made to employ a system by performing processing corresponding to change of these data. While various kinds of alarm information, such as abnormalities of the device itself and abnormalities of status value, exists at this time, apart from these, the employment information under directions of assembly processing or manufacture exists.

[0003] Conventionally, alarm information and employment information are managed according to an individual, and alarm information displays a message on the display screen of a terminal as an alarm to an operator, and generating time of day is added and saved at a logging file at alarm information, employment information is processed within an application program, it is used for a screen display or printing as data only for the systems, and the alien system is treated as unrelated data.

[0004] Moreover, a network is used in many cases for resource sharing by two or more systems called file sharing and PrinterShare, and it is changing to the client/server system which this network consists of on the basis of requesting processing from a client to a server recently, and receiving that result. When said control system is constituted as a client/server system, the server searched the database by the demand from a client so that it might be represented by database service, and has stopped at offering the service which processes the demand from the client of returning the retrieval result to a client.

[0005] Although it is possible in such a client/server system to distribute processing between a server and KURAINATO since it operates in the environment restricted in the client, cooperation between clients is needed in a system by which sequential execution of **** and one processing is carried out to control systems, such as a factory automation and plant automation, by the alien system.

[0006] As the implementation approach of cooperation between this client As conventionally shown in <u>drawing 5</u>, they are Server S and two or more clients C1. And C2 It connects through Network N, for example, is a client C1. When alarm information occurs Network N is minded for the alarm information, and it is the client C2 of writing and another side to the predetermined field of shared file F of Server S. Then Read in and its change of state are periodically detected for the data of the predetermined storing field in shared file F of Server S through Network N, and it is made to perform control processing according to a change of state.

[0007]

[Problem(s) to be Solved by the Invention] However, in the above-mentioned conventional network system, since he is trying to manage alarm information and employment information independently, while being unable to grasp a system-wide situation, since information is distributed by two or more clients and the processing in each client is described by the

program, with a network system, the unsolved technical problem that grasp of the information about a system-wide alarm and a system-wide employment condition is difficult occurs.

[0008] Moreover, the unsolved technical problem that the delay of the period to which each client checks the data in the shared file on a server periodically since it cannot cooperate directly between clients by constraint of a memory limit etc. in disk operation system when cooperating between clients and which needs processing unnecessary to ** and a client side, and carries out data validation if it is kicked and is ** occurs also occurs.

[0009] Then, when it is made paying attention to the unsolved technical problem of the above-mentioned conventional example and a control system is constituted from a network, this invention aims at offering the event management method in the network system which can carry out cooperation between clients to real time in order to reduce the overheads of processing of the whole system including a client and to answer in the real time.

[0010]
[Means for Solving the Problem] In order to attain the above-mentioned object, the event management method in the network system concerning claim 1 is characterized by two or more clients abstracting as an event the information generated in each client, and the data accompanying activation of the processing in the network system connected to the server through the network, bundling up an event by the client and server which constitute a system, and making it manage.

[0011] Moreover, the event management method in the network system concerning claim 2 abstracts as an event the information generated in each client, and the data accompanying activation of the processing in the network system by which two or more clients were connected to the server through the network, each client adds destination data to the event to generate, it transmits to said server, and it is characterized by to transmit an event to the destination client specified by the server concerned.

[0012] Furthermore, the event management method in the network system concerning claim 3 is characterized by each client performing processing defined as analyzing an event at the time of a carrier beam in the transfer of the event from a server.

[0013]
[Function] By the event management method concerning claim 1, while two or more functions, such as information, such as alarm information, and processing of those, are simultaneously manageable by abstracting as an event the data accompanying activation of the processing to information, such as abnormality information, and this which are generated in each client, cooperation between clients can be easily taken by managing an event collectively by the client and server which constitute a system for an event.

[0014] moreover, by the event management method concerning claim 2, when taking cooperation between clients in addition to the above-mentioned operation, the overheads of processing by each client are reduced by adding destination data to an event from one client, transmitting to a server, and transmitting an event to a destination client by the server -- cooperation of real time is both attained between each client.

[0015] Furthermore, by the event management method concerning claim 3, when the event transmitted to the client from the server is for example, alarm information, display of the alarm message, the processing object and the display of the content to this, management processing, etc. can be performed simultaneously.

[0016]
[Example] Hereafter, the example of this invention is explained based on a drawing. Drawing 1 is the block diagram showing the 1st example of this invention. Among drawing, S is a server and the monitor station 11, the clerical work terminal 12, and the alarm terminal 13 as a client are connected to this server S through the networks N, such as LAN.

[0017] If a monitor station 11 carries out data reception here from programmable controller 11a which supervises the operating status of facility devices, such as a plant and works, through a field bus FB When facility monitor processing programmed beforehand is performed and the abnormalities of a facility device are detected, the equipment item number which abnormalities generated is used as an event code, the destination address which specifies the clerical work terminal 12 and the alarm terminal 13 as this as an advice place is added, and it transmits to

Server S.

[0018] In Server S, if the event from a monitor station 11 is received, event processing beforehand set up by event processing section 10a will be performed. Request logging processing to logging processing section 10b, and while dividing and carrying out logging of the received event data to each item of generating time, a generating agency system name, an advice place system name, an event code, and event data An event is notified when event processing predetermined by the server itself is performed when it judges whether the destination address is added to the event and there is no destination address, and there is the destination address, the client 12, for example, the clerical work terminal, of the destination address.

[0019] At the clerical work terminal 12, if the event code from a monitor station 11 is received via Server S, with reference to event definition file 12b which performed event processing set up beforehand and was beforehand stored by event processing section 12a, read-out and this processing will be performed for the content of processing corresponding to an event code. Moreover, event processing beforehand set up by event processing section 13a will be performed, singing of the buzzer will be carried out with reference to event definition file 13b, and the alarm terminal 13 will report the abnormalities of a facility device to an operator, if the event code from a monitor station 11 is received via Server S.

[0020] Next, it explains with the flow chart of drawing 3 showing the event processing of the flow chart of drawing 2 and clerical work terminal which express the event processing of Server S for actuation of the 1st example of the above. Namely, the event processing of Server S is step S1 first, as shown in drawing 2 . In judging whether the event coat from a monitor station 11 was received and not receiving an event code If it stands by and an event code is received until it receives, it will shift to step S2. The event data received to logging processing section 10b Generating time, Request the logging processing which divides and carries out logging to each item of a generating agency system name, an advice place system name, an event code, and event data, and, subsequently to step S3, it shifts. When it judges and the destination address is added, whether the destination address is added to the received event code After shifting to step S4 and transmitting an event code to the destination address, when return and the destination address are not added to said step S1 It judges that it is a self-addressed event code, and processing of printing of the data based on a printer etc. is gained with reference to the event definition file which shifts to step S5 and is not illustrated, subsequently to step S6 it shifts, and after performing processing of gained printing, it returns to said step S1.

[0021] Moreover, the event processing in the clerical work terminal 12 As shown in drawing 3 , when it judges first whether it is a carrier beam for a transfer of the event code from Server S at step S11 and there is no transfer of an event code When it stands by until there was a transfer, and there is a transfer of an event code With reference to event definition file 12b, gain floor drawing display processing showing an abnormal occurrence location, the processing, i.e., alarm display processing, corresponding to an event code, and, subsequently to step S12, it shifts. While performing these processings and performing an alarm display on the display screen, after displaying floor drawing showing an abnormal occurrence location, it returns to step S11.

[0022] therefore, when a monitor station 11 has not detected the abnormalities of a facility device now Though an event code is generated, it is the retrieval demand of the database only stored in the printing demand to Server S, or Server S etc. Since an event is not notified to other clients 12, i.e., clerical work terminal, and alarm terminals 13 If the event code generated with a monitor station 11 is transmitted to Server S, since logging is requested to logging processing section 10b by the event processing shown in drawing 2 of this server S (step S2) and the destination address is not added By referring to an event definition file within Server S, processing of the printing processing corresponding to an event code, database retrieval processing, etc. is gained (step S5), and processing corresponding to these is performed (step S6).

[0023] However, when a monitor station 11 detects the abnormalities of a facility device, the equipment item number which abnormalities generated is used as an event code, the address of the clerical work terminal 12 of the destination and the alarm terminal 13 is added to this

event code, and it transmits to Server S. For this reason, at Server S, when an event code is received, about performing event processing of drawing 2 and requesting logging processing from logging processing section 10b, it is the same as that of the above, but since the address of the clerical work terminal 12 of the destination and the alarm terminal 13 is added to the event code, it shifts to step S4 from step S3, and an event code is transmitted to the clerical work terminal 12 and the alarm terminal 13 as it is.

[0024] For this reason, at the clerical work terminal 12, by transmitting an event code from Server S, event processing shown in drawing 3 is performed, and the processing corresponding to an event code is gained with reference to event definition file 12b. In this case, since an event code is a gray-goods machine number from abnormalities, the processing which can cope with abnormalities, such as alarm display processing showing the abnormal occurrence of this gray-goods machine from abnormalities and floor drawing display processing which shows the location of the gray-goods machine from abnormalities, is gained, these processings are performed, and an alarm display, a floor drawing display, etc. are performed on the display screen.

[0025] Moreover, also at the alarm terminal 13, if an event code is received from Server S, with reference to event definition file 13b, processing corresponding to an event code to which buzzer singing processing is gained, for example and singing of the buzzer is carried out corresponding to this will be performed, and an abnormal occurrence will be reported to an operator. Thus, when a monitor station 11 detects the abnormalities of a facility device according to the 1st example of the above By adding the destination address to the event code corresponding to this, and transmitting to Server S Since the destination address is added when an event code is received by Server S, only by requesting logging processing from logging processing section 10b Since an event code is transmitted to the destination as it is, an event code is analyzed with reference to an event definition file in the destination and predetermined processing is performed Since each client side does not need to supervise the shared file of Server S, either, while the burden of Server S is mitigable Since an event is transmitted to a destination client shortly after an event is transmitted to Server S from a client while being able to mitigate a burden and being able to reduce system-wide overheads, cooperation between clients can be performed on real time.

[0026] Next, the 2nd example of this invention is explained about drawing 4 . This 2nd example shows the case where a product is assembled based on the ingredient which showed the case where this invention was applied to the automatic assembly line in a factory automation system, for example, was conveyed by conveyer. That is, in the 2nd example, as shown in drawing 4 , while the terminal is arranged for every process of an assembly line, for example, a terminal 21 is arranged at the m-th process, a terminal 22 is arranged at the n-th process which follows this m-th process, and these terminals 21 and 22 are connected to Server S through the networks N, such as LAN.

[0027] Here, while Server S has event processing section 10a and logging processing section 10b like the 1st example mentioned above, it is equipped with schedule Management Department 10c which manages the assembly schedule of the whole automatic assembly line, and transmits the event which expresses assembly directions etc. with this schedule Management Department 10c to a terminal 21. When an event is received, each terminals 21 and 22 have the event processing sections 21b and 22b which gain the processing corresponding to an event with reference to the event definition files 21a and 22a, and perform processing gained in these event processing sections 21b and 22b.

[0028] Next, actuation of the 2nd example of the above is explained. If the event showing the assembly directions for assembling a predetermined product from schedule Management Department 10c of Server S to the terminal 21 of the m-th process now is transmitted through Network N, at the terminal 21 which received this, by that event processing section 21b, with reference to event definition file 21a, the assembly processing of a predetermined product for example, corresponding to an event will be gained, and this assembly processing will be performed. And if predetermined assembly processing is completed, while adding production data, such as the number of excellent articles, to an event, the destination is specified as the terminal 22 of the n-th process which is degree process, and it transmits to Server S.

[0029] In Server S, if the event from a terminal 21 is received, while requesting logging processing to logging processing section 10a, an event is transmitted to a terminal 22 through Network N. For this reason, at a terminal 21, when the event from Server S is received, while gaining the processing corresponding to an event with reference to event definition file 22a, the production data added to the event are given as an operational parameter, and predetermined assembly processing is performed.

[0030] Thus, while according to the 2nd example of the above being able to transmit each terminal 21 arranged on the automatic assembly line, and the event which expresses assembly directions etc. through Server S also among 22 on real time and being able to realize cooperation between a terminal 21 and 22 on real time, system-wide overheads are reducible. In addition, in each above-mentioned example, although the case where alarm information and its processing, assembly processing, etc. were defined as an event was explained, it is not limited to these and an event can be set up to all the data that need to take cooperation among two or more clients.

[0031]
[Effect of the Invention] As explained above, according to the event management method in the network system concerning claim 1 Since the abnormality information generated in each client and the data accompanying activation of processing are abstracted as an event, an event is put in block by the client and server which constitute a system and it was made to manage While two or more functions, such as information management and its processing, are simultaneously manageable, the effectiveness that cooperation between clients can be taken on real time is acquired by managing an event collectively by the client and server which constitute a system for an event.

[0032] Moreover, according to the event management method in the network system concerning claim 2 The information generated in each client and the data accompanying activation of the processing are abstracted as an event. Since the event was transmitted to the destination client which each client added destination data to the event to generate, transmitted to said server, and was specified by the server concerned The effectiveness that the thing which reduce the overheads of processing by the whole system and for which cooperation between each client is performed on real time both becomes possible is acquired.

[0033] According to the event management method in the network system concerning claim 3, furthermore, each client Since processing defined as analyzing an event at the time of a carrier beam in the transfer of the event from a server is performed When the event transmitted to the client from the server is for example, alarm information, display of the alarm message, the processing object and the display of the content to this, management processing, etc. can be performed simultaneously. The effectiveness that the event data transmitted between clients can be simplified is acquired.

TECHNICAL FIELD

[Industrial Application] This invention relates to the event management method in the network system which manages the abnormality information and employment information which are generated by the system used as a controlled system in for example, the factory automation FA and process automation PA.

PRIOR ART

[Description of the Prior Art] Usually, with control systems, such as a factory automation FA and process automation PA, the data of the various crises which exist in the site used as a controlled system are collected, and it is made to employ a system by performing processing corresponding to change of these data. While various kinds of alarm information, such as abnormalities of the device itself and abnormalities of status value, exists at this time, apart from these, the employment information under directions of assembly processing or manufacture exists.

[0003] Conventionally, alarm information and employment information are managed according

to an individual, and alarm information displays a message on the display screen of a terminal as an alarm to an operator, and generating time of day is added and saved at a logging file at alarm information, employment information is processed within an application program, it is used for a screen display or printing as data only for the systems, and the alien system is treated as unrelated data.

[0004] Moreover, a network is used in many cases for resource sharing by two or more systems called file sharing and PrinterShare, and it is changing to the client/server system which this network consists of on the basis of requesting processing from a client to a server recently, and receiving that result. When said control system is constituted as a client/server system, the server searched the database by the demand from a client so that it might be represented by database service, and has stopped at offering the service which processes the demand from the client of returning the retrieval result to a client.

[0005] Although it is possible in such a client/server system to distribute processing between a server and KURAINATO since it operates in the environment restricted in the client, cooperation between clients is needed in a system by which sequential execution of **** and one processing is carried out to control systems, such as a factory automation and plant automation, by the alien system.

[0006] As the implementation approach of cooperation between this client As conventionally shown in drawing 5 , they are Server S and two or more clients C1. And C2 It connects through Network N, for example, is a client C1. When alarm information occurs Network N is minded for the alarm information, and it is the client C2 of writing and another side to the predetermined field of shared file F of Server S. Then Read in and its change of state are periodically detected for the data of the predetermined storing field in shared file F of Server S through Network N, and it is made to perform control processing according to a change of state.

EFFECT OF THE INVENTION

[Effect of the Invention] As explained above, according to the event management method in the network system concerning claim 1 Since the abnormality information generated in each client and the data accompanying activation of processing are abstracted as an event, an event is put in block by the client and server which constitute a system and it was made to manage While two or more functions, such as information management and its processing, are simultaneously manageable, the effectiveness that cooperation between clients can be taken on real time is acquired by managing an event collectively by the client and server which constitute a system for an event.

[0032] Moreover, according to the event management method in the network system concerning claim 2 The information generated in each client and the data accompanying activation of the processing are abstracted as an event. Since the event was transmitted to the destination client which each client added destination data to the event to generate, transmitted to said server, and was specified by the server concerned The effectiveness that the thing which reduce the overheads of processing by the whole system and for which cooperation between each client is performed on real time both becomes possible is acquired.

[0033] According to the event management method in the network system concerning claim 3, furthermore, each client Since processing defined as analyzing an event at the time of a carrier beam in the transfer of the event from a server is performed When the event transmitted to the client from the server is for example, alarm information, display of the alarm message, the processing object and the display of the content to this, management processing, etc. can be performed simultaneously. The effectiveness that the event data transmitted between clients can be simplified is acquired.

TECHNICAL PROBLEM

[Problem(s) to be Solved by the Invention] However, in the above-mentioned conventional network system, since he is trying to manage alarm information and employment information independently, while being unable to grasp a system-wide situation, since information is

distributed by two or more clients and the processing in each client is described by the program, with a network system, the unsolved technical problem that grasp of the information about a system-wide alarm and a system-wide employment condition is difficult occurs.
[0008] Moreover, the unsolved technical problem that the delay of the period to which each client checks the data in the shared file on a server periodically since it cannot cooperate directly between clients by constraint of a memory limit etc. in disk operation system when cooperating between clients and which needs processing unnecessary to ** and a client side, and carries out data validation if it is kicked and is ** occurs also occurs.
[0009] Then, when it is made paying attention to the unsolved technical problem of the above-mentioned conventional example and a control system is constituted from a network, this invention aims at offering the event management method in the network system which can carry out cooperation between clients to real time in order to reduce the overheads of processing of the whole system including a client and to answer in the real time.

MEANS

[Means for Solving the Problem] In order to attain the above-mentioned object, the event management method in the network system concerning claim 1 is characterized by two or more clients abstracting as an event the information generated in each client, and the data accompanying activation of the processing in the network system connected to the server through the network, bundling up an event by the client and server which constitute a system, and making it manage.
[0011] Moreover, the event management method in the network system concerning claim 2 abstracts as an event the information generated in each client, and the data accompanying activation of the processing in the network system by which two or more clients were connected to the server through the network, each client adds destination data to the event to generate, it transmits to said server, and it is characterized by to transmit an event to the destination client specified by the server concerned.
[0012] Furthermore, the event management method in the network system concerning claim 3 is characterized by each client performing processing defined as analyzing an event at the time of a carrier beam in the transfer of the event from a server.

OPERATION

[Function] By the event management method concerning claim 1, while two or more functions, such as information, such as alarm information, and processing of those, are simultaneously manageable by abstracting as an event the data accompanying activation of the processing to information, such as abnormality information, and this which are generated in each client, cooperation between clients can be easily taken by managing an event collectively by the client and server which constitute a system for an event.
[0014] moreover, by the event management method concerning claim 2, when taking cooperation between clients in addition to the above-mentioned operation, the overheads of processing by each client are reduced by adding destination data to an event from one client, transmitting to a server, and transmitting an event to a destination client by the server -- cooperation of real time is both attained between each client.
[0015] Furthermore, by the event management method concerning claim 3, when the event transmitted to the client from the server is for example, alarm information, display of the alarm message, the processing object and the display of the content to this, management processing, etc. can be performed simultaneously.

EXAMPLE

[Example] Hereafter, the example of this invention is explained based on a drawing. Drawing 1 is the block diagram showing the 1st example of this invention. Among drawing, S is a server and the monitor station 11, the clerical work terminal 12, and the alarm terminal 13 as a client

are connected to this server S through the networks N, such as LAN.

[0017] If a monitor station 11 carries out data reception here from programmable controller 11a which supervises the operating status of facility devices, such as a plant and works, through a field bus FB When facility monitor processing programmed beforehand is performed and the abnormalities of a facility device are detected, the equipment item number which abnormalities generated is used as an event code, the destination address which specifies the clerical work terminal 12 and the alarm terminal 13 as this as an advice place is added, and it transmits to Server S.

[0018] In Server S, if the event from a monitor station 11 is received, event processing beforehand set up by event processing section 10a will be performed. Request logging processing to logging processing section 10b, and while dividing and carrying out logging of the received event data to each item of generating time, a generating agency system name, an advice place system name, an event code, and event data An event is notified when event processing predetermined by the server itself is performed when it judges whether the destination address is added to the event and there is no destination address, and there is the destination address, the client 12, for example, the clerical work terminal, of the destination address.

[0019] At the clerical work terminal 12, if the event code from a monitor station 11 is received via Server S, with reference to event definition file 12b which performed event processing set up beforehand and was beforehand stored by event processing section 12a, read-out and this processing will be performed for the content of processing corresponding to an event code. Moreover, event processing beforehand set up by event processing section 13a will be performed, singing of the buzzer will be carried out with reference to event definition file 13b, and the alarm terminal 13 will report the abnormalities of a facility device to an operator, if the event code from a monitor station 11 is received via Server S.

[0020] Next, it explains with the flow chart of drawing 3 showing the event processing of the flow chart of drawing 2 and clerical work terminal which express the event processing of Server S for actuation of the 1st example of the above. Namely, the event processing of Server S is step S1 first, as shown in drawing 2 . In judging whether the event coat from a monitor station 11 was received and not receiving an event code If it stands by and an event code is received until it receives, it will shift to step S2. The event data received to logging processing section 10b Generating time, Request the logging processing which divides and carries out logging to each item of a generating agency system name, an advice place system name, an event code, and event data, and, subsequently to step S3, it shifts. When it judges and the destination address is added, whether the destination address is added to the received event code After shifting to step S4 and transmitting an event code to the destination address, when return and the destination address are not added to said step S1 It judges that it is a self-addressed event code, and processing of printing of the data based on a printer etc. is gained with reference to the event definition file which shifts to step S5 and is not illustrated, subsequently to step S6 it shifts, and after performing processing of gained printing, it returns to said step S1.

[0021] Moreover, the event processing in the clerical work terminal 12 As shown in drawing 3 , when it judges first whether it is a carrier beam for a transfer of the event code from Server S at step S11 and there is no transfer of an event code When it stands by until there was a transfer, and there is a transfer of an event code With reference to event definition file 12b, gain floor drawing display processing showing an abnormal occurrence location, the processing, i.e., alarm display processing, corresponding to an event code, and, subsequently to step S12, it shifts. While performing these processings and performing an alarm display on the display screen, after displaying floor drawing showing an abnormal occurrence location, it returns to step S11.

[0022] therefore, when a monitor station 11 has not detected the abnormalities of a facility device now Though an event code is generated, it is the retrieval demand of the database only stored in the printing demand to Server S, or Server S etc. Since an event is not notified to other clients 12, i.e., clerical work terminal, and alarm terminals 13 If the event code generated with a monitor station 11 is transmitted to Server S, since logging is requested to logging processing section 10b by the event processing shown in drawing 2 of this server S (step S2)

and the destination address is not added By referring to an event definition file within Server S, processing of the printing processing corresponding to an event code, database retrieval processing, etc. is gained (step S5), and processing corresponding to these is performed (step S6).

[0023] However, when a monitor station 11 detects the abnormalities of a facility device, the equipment item number which abnormalities generated is used as an event code, the address of the clerical work terminal 12 of the destination and the alarm terminal 13 is added to this event code, and it transmits to Server S. For this reason, at Server S, when an event code is received, about performing event processing of drawing 2 and requesting logging processing from logging processing section 10b, it is the same as that of the above, but since the address of the clerical work terminal 12 of the destination and the alarm terminal 13 is added to the event code, it shifts to step S4 from step S3, and an event code is transmitted to the clerical work terminal 12 and the alarm terminal 13 as it is.

[0024] For this reason, at the clerical work terminal 12, by transmitting an event code from Server S, event processing shown in drawing 3 is performed, and the processing corresponding to an event code is gained with reference to event definition file 12b. In this case, since an event code is a gray-goods machine number from abnormalities, the processing which can cope with abnormalities, such as alarm display processing showing the abnormal occurrence of this gray-goods machine from abnormalities and floor drawing display processing which shows the location of the gray-goods machine from abnormalities, is gained, these processings are performed, and an alarm display, a floor drawing display, etc. are performed on the display screen.

[0025] Moreover, also at the alarm terminal 13, if an event code is received from Server S, with reference to event definition file 13b, processing corresponding to an event code to which buzzer singing processing is gained, for example and singing of the buzzer is carried out corresponding to this will be performed, and an abnormal occurrence will be reported to an operator. Thus, when a monitor station 11 detects the abnormalities of a facility device according to the 1st example of the above By adding the destination address to the event code corresponding to this, and transmitting to Server S Since the destination address is added when an event code is received by Server S, only by requesting logging processing from logging processing section 10b Since an event code is transmitted to the destination as it is, an event code is analyzed with reference to an event definition file in the destination and predetermined processing is performed Since each client side does not need to supervise the shared file of Server S, either, while the burden of Server S is mitigable Since an event is transmitted to a destination client shortly after an event is transmitted to Server S from a client while being able to mitigate a burden and being able to reduce system-wide overheads, cooperation between clients can be performed on real time.

[0026] Next, the 2nd example of this invention is explained about drawing 4 . This 2nd example shows the case where a product is assembled based on the ingredient which showed the case where this invention was applied to the automatic assembly line in a factory automation system, for example, was conveyed by conveyer. That is, in the 2nd example, as shown in drawing 4 , while the terminal is arranged for every process of an assembly line, for example, a terminal 21 is arranged at the m-th process, a terminal 22 is arranged at the n-th process which follows this m-th process, and these terminals 21 and 22 are connected to Server S through the networks N, such as LAN.

[0027] Here, while Server S has event processing section 10a and logging processing section 10b like the 1st example mentioned above, it is equipped with schedule Management Department 10c which manages the assembly schedule of the whole automatic assembly line, and transmits the event which expresses assembly directions etc. with this schedule Management Department 10c to a terminal 21. When an event is received, each terminals 21 and 22 have the event processing sections 21b and 22b which gain the processing corresponding to an event with reference to the event definition files 21a and 22a, and perform processing gained in these event processing sections 21b and 22b.

[0028] Next, actuation of the 2nd example of the above is explained. If the event showing the assembly directions for assembling a predetermined product from schedule Management

Department 10c of Server S to the terminal 21 of the m-th process now is transmitted through Network N, at the terminal 21 which received this, by that event processing section 21b, with reference to event definition file 21a, the assembly processing of a predetermined product for example, corresponding to an event will be gained, and this assembly processing will be performed. And if predetermined assembly processing is completed, while adding production data, such as the number of excellent articles, to an event, the destination is specified as the terminal 22 of the n-th process which is degree process, and it transmits to Server S.

[0029] In Server S, if the event from a terminal 21 is received, while requesting logging processing to logging processing section 10a, an event is transmitted to a terminal 22 through Network N. For this reason, at a terminal 21, when the event from Server S is received, while gaining the processing corresponding to an event with reference to event definition file 22a, the production data added to the event are given as an operational parameter, and predetermined assembly processing is performed.

[0030] Thus, while according to the 2nd example of the above being able to transmit each terminal 21 arranged on the automatic assembly line, and the event which expresses assembly directions etc. through Server S also among 22 on real time and being able to realize cooperation between a terminal 21 and 22 on real time, system-wide overheads are reducible. In addition, in each above-mentioned example, although the case where alarm information and its processing, assembly processing, etc. were defined as an event was explained, it is not limited to these and an event can be set up to all the data that need to take cooperation among two or more clients.

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]
[Drawing 1] It is the block diagram showing the 1st example of this invention.
[Drawing 2] It is the flow chart which shows the event processing of a server.
[Drawing 3] It is the flow chart which shows the event processing of a clerical work terminal.
[Drawing 4] It is the block diagram showing the 2nd example of this invention.
[Drawing 5] It is the block diagram showing the conventional example.
[Description of Notations]
S Server
10a Event processing section
10b Logging processing section
10c Schedule Management Department
11 Monitor Station
11A Programmable controller
12 Clerical Work Terminal
12a Event processing section
12b Event definition file
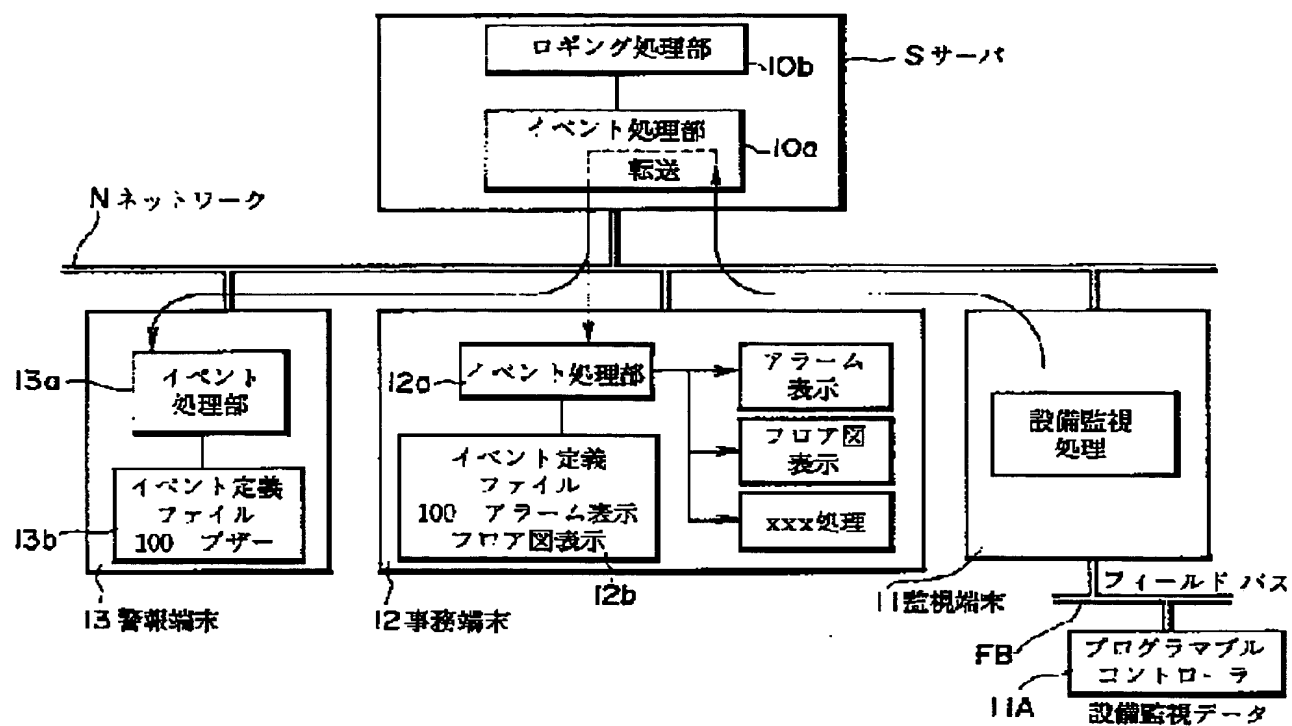13 Alarm Terminal
13a Event processing section
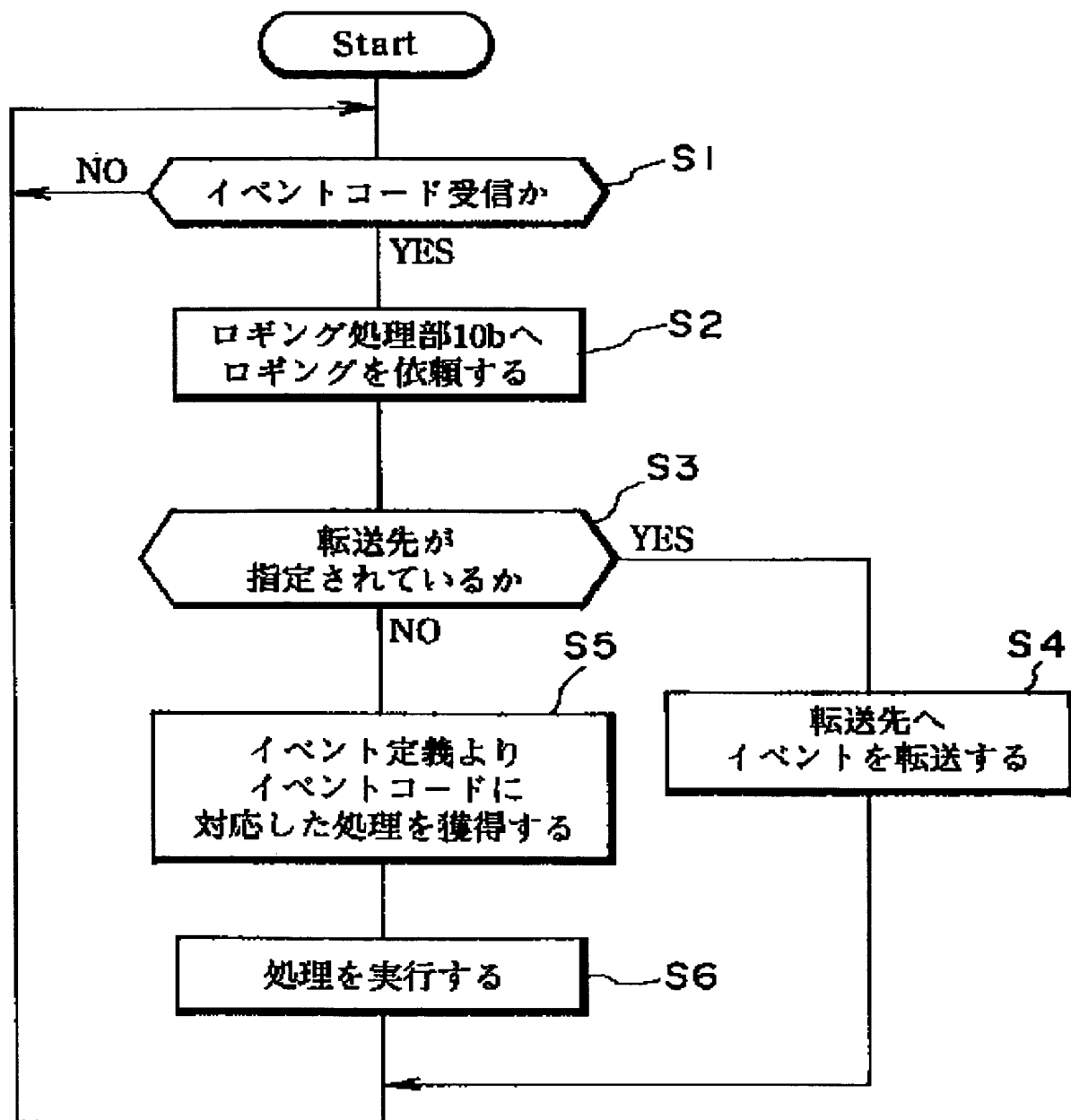13b Event definition file
21 22 Terminal
21a, 22a Event definition file
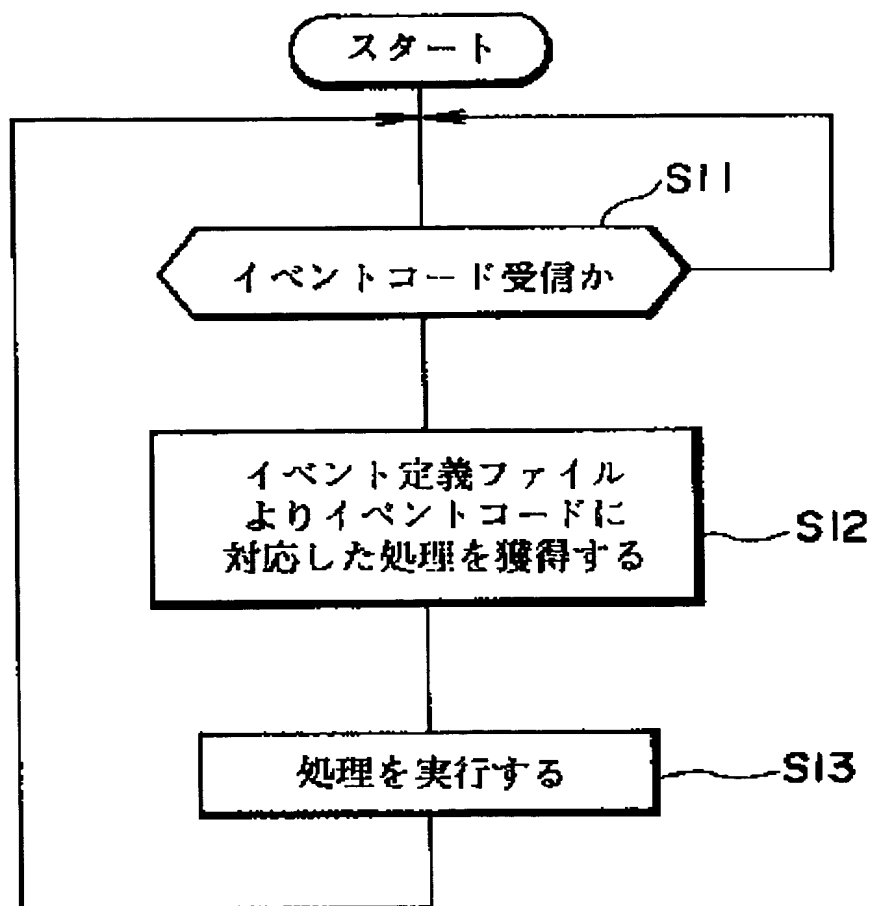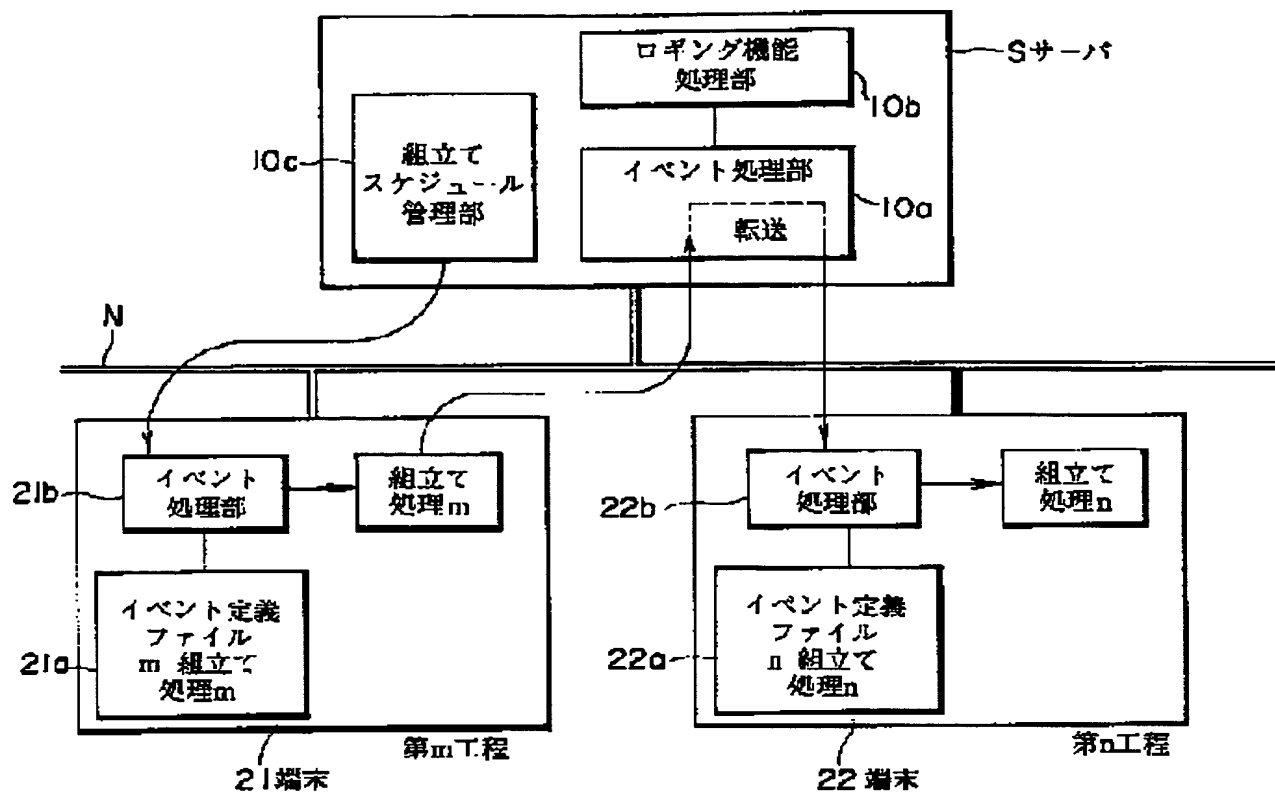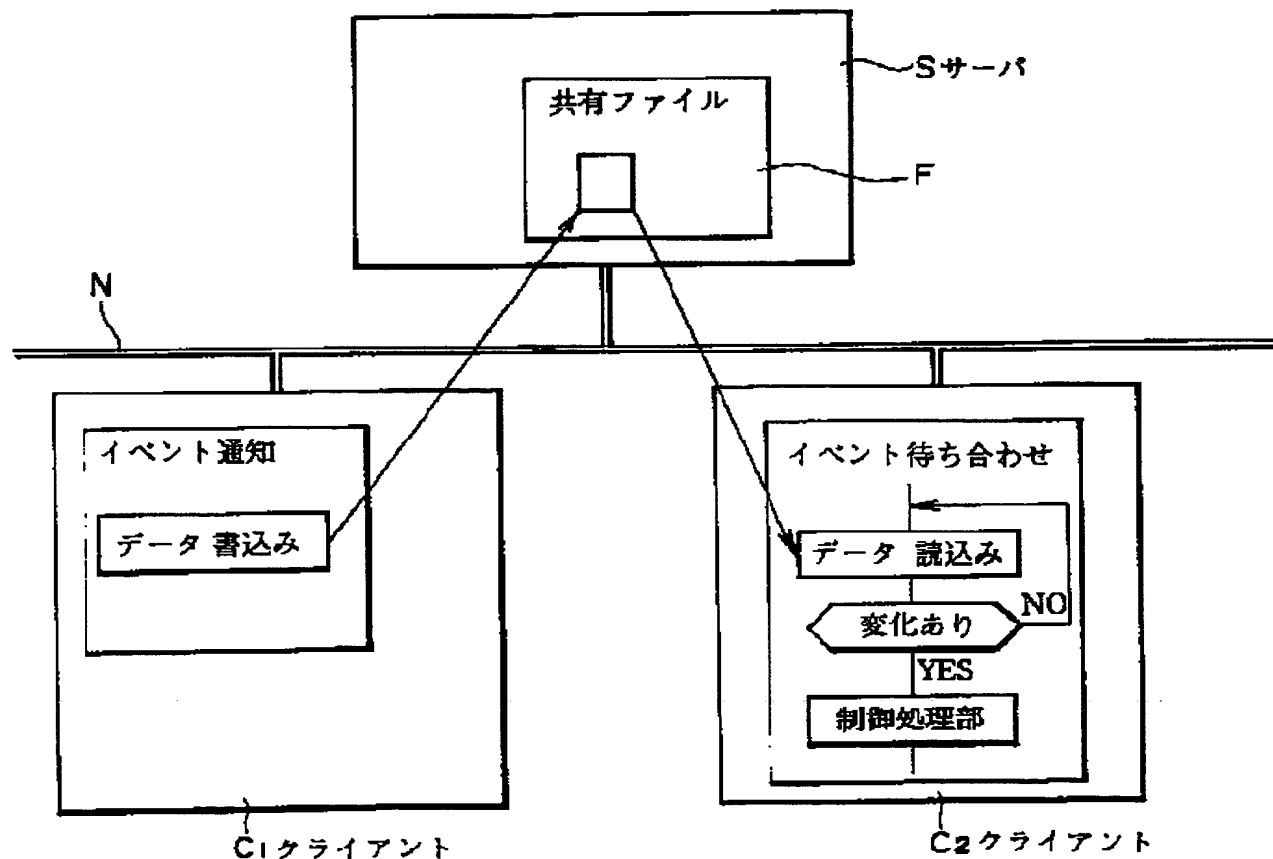21b, 22b Event processing section

DRAWINGS

Drawing 1

```
                    ┌─────────┐
                    │  Start  │
                    └────┬────┘
                         │
        ┌────────────────▼────────────────┐
  NO    ╱                                  ╲      ～S1
◄───────  イベントコード受信か               ╲
        ╲                                  ╱
         ╲────────────────┬───────────────╱
                          │ YES
              ┌───────────▼───────────┐
              │  ロギング処理部10bへ    │      ～S2
              │  ロギングを依頼する      │
              └───────────┬───────────┘
                          │
        ┌─────────────────▼──────────────────┐
        ╱                                     ╲  S3
       ╱          転送先が                      ╲  YES
       ╲       指定されているか                  ╱─────────┐
        ╲                                     ╱          │
         ╲───────────────┬────────────────────╱          │
                         │ NO                             │
              S5         │                          S4    │
         ┌───────────────▼──────────┐       ┌─────────────▼──────────┐
         │     イベント定義より        │       │       転送先へ          │
         │    イベントコードに         │       │    イベントを転送する     │
         │   対応した処理を獲得する     │       └─────────────┬──────────┘
         └───────────────┬──────────┘                     │
                         │                                │
              ┌──────────▼──────────┐                     │
              │   処理を実行する       │ ～S6                │
              └──────────┬──────────┘                     │
                         │◄─────────────────────────────────┘
```

Drawing 2

```
              ┌─────────────┐
              │   スタート   │
              └─────────────┘
                     │
  ┌──────────────────┤
  │                   │                    S11
  │          ╱──────────────────╲    ╱
  │         ╱  イベントコード受信か  ╲
  │         ╲                    ╱
  │          ╲──────────────────╱
  │                   │
  │         ┌──────────────────┐
  │         │  イベント定義ファイル │          S12
  │         │  よりイベントコードに │    ╱
  │         │  対応した処理を獲得する │
  │         └──────────────────┘
  │                   │
  │         ┌──────────────────┐
  │         │   処理を実行する    │────── S13
  │         └──────────────────┘
  │                   │
  └───────────────────┘
```

Drawing 3

Drawing 4

Drawing 5

(54)【発明の名称】 ネットワークシステムにおけるイベント管理方式

(57)【要約】

【目的】制御システムにおいて処理のオーバーヘッドを削減し、クライアント間の連携をリアルタイムで実現するネットワークシステムにおけるイベント管理方式を提供する。

【構成】サーバSとクライアントとしての監視端末11，事務端末12及び警報端末13をネットワークNを介して接続し、監視端末11で設備機器の異常を検出したときに、その異常発生機器番号をイベントコードとし、これに転送先の事務端末12，警報端末13のアドレスを付加してサーバSに送信することにより、サーバSで発生時刻、連携端末等の記録をロギング処理部10bに依頼すると共に、イベントコードを転送先の端末12，13に転送し、各端末でイベントコ定義ファイル12b，13bを参照してイベントコードに対応する処理を獲得し、これを実行する。

1
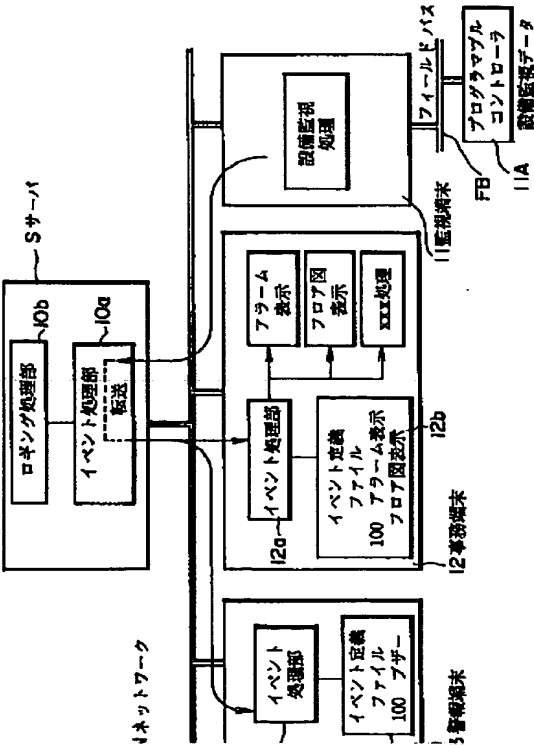
【特許請求の範囲】
【請求項1】　複数のクライアントがサーバにネットワークを介して接続されたネットワークシステムにおいて、各クライアントで発生する情報及びその処理の実行に伴うデータをイベントとして抽象化し、システムを構成するクライアント及びサーバでイベントを一括して管理するようにしたことを特徴とするネットワークシステムにおけるイベント管理方式。

【請求項2】　複数のクライアントがサーバにネットワークを介して接続されたネットワークシステムにおいて、各クライアントで発生する情報及びその処理の実行に伴うデータをイベントとして抽象化し、各クライアントは発生するイベントに転送先データを付加して前記サーバに送信し、当該サーバで指定された転送先クライアントにイベントを転送するようにしたことを特徴とするネットワークシステムにおけるイベント管理方式。

【請求項3】　各クライアントは、サーバからのイベントの転送を受けたときに、イベントを解析してこれに定義された処理を実行することを特徴とする請求項1又は2に記載のネットワークシステムにおけるイベント管理方式。

【発明の詳細な説明】
【０００１】
【産業上の利用分野】本発明は、例えばファクトリーオートメーションＦＡやプロセスオートメーションＰＡにおいて、制御対象となるシステムで発生する異常情報及び運用情報を管理するネットワークシステムにおけるイベント管理方式に関する。

【０００２】
【従来の技術】通常、ファクトリーオートメーションＦＡやプロセスオートメーションＰＡ等の制御システムでは、制御対象となる現場に存在する各種危機のデータを収集し、これらのデータの変化に対応した処理を実行することでシステムの運用を行うようにしている。このとき、機器自体の異常や状態値の異常などの各種のアラーム情報が存在すると共に、これらとは別に組立加工の指示や製造中の運用情報が存在する。

【０００３】従来は、アラーム情報と運用情報とは個別に管理しており、アラーム情報はオペレータへの警報として例えば端末の表示画面上にメッセージを表示し、且つロギングファイルにアラーム情報に発生時刻を付加して保存し、運用情報は応用プログラム内で処理され、そのシステム専用のデータとして画面表示や印字に使用され、他のシステムとは関係のないデータとして扱われている。

【０００４】また、ファイル共有、プリンタ共有という複数のシステムによる資源の共有のために、ネットワークが利用されるケースが多く、このネットワークは、最近では、クライアントからサーバへ処理を依頼し、その

2

ト／サーバシステムに変化しつつある。前記制御システムをクライアント／サーバシステムとして構成した場合、サーバはデータベースサービスに代表されるようにクライアントからの要求によりデータベースを検索し、その検索結果をクライアントに返送するというクライアントからの要求を処理するサービスを提供するに止まっている。

【０００５】このようなクライアント／サーバシステムでは、クライアント内に限られた環境で動作するため、サーバとクラインアト間で処理を分散させることは可能であるが、ファクトリーオートメーションやプラントオートメーション等の制御システムにおてい、1つの処理が他のシステムで順次実行されるようなシステムでは、クライアント間の連携が必要となる。

【０００６】このクライアント間の連携の実現方法としては、従来、図5に示すように、サーバSと複数のクライアントC₁ 及びC₂ とをネットワークNを介して接続し、例えばクライアントC₁ でアラーム情報が発生したときには、そのアラーム情報をネットワークNを介してサーバSの共有ファイルFの所定領域に書込み、他方のクライアントC₂ では、ネットワークNを介して定期的にサーバSの共有ファイルF内の所定格納領域のデータを読込み、その状態変化を検出して、状態変化に応じた制御処理を実行するようにしている。

【０００７】
【発明が解決しようとする課題】しかしながら、上記従来のネットワークシステムにおいては、アラーム情報と運用情報とを別々に管理するようにしているので、システム全体の状況が把握できないと共に、ネットワークシステムでは、複数のクライアントに情報が分散され、各クライアント内の処理がプログラムで記述されるため、システム全体のアラームや運用状態に関する情報の把握が困難であるという未解決の課題がある。

【０００８】また、クライアント間で連携を行う場合には、ディスクオペレーションシステムでは、メモリ制限等の制約によりクライアント間で直接連携を行うことができないため、各クライアントがサーバ上の共有ファイル内のデータを定期的に確認しなければならず、クライアント側に不要な処理を必要とし、またデータ確認する周期の遅れが発生するという未解決の課題もある。

【０００９】そこで、本発明は、上記従来例の未解決の課題に着目してなされたものであり、制御システムをネットワークで構成した場合に、クライアントを始めとしてシステム全体の処理のオーバーヘッドを削減し実時間で応答を行うためにクライアント間の連携をリアルタイムに行うことができるネットワークシステムにおけるイベント管理方式を提供することを目的としている。

【００１０】
【課題を解決するための手段】上記目的を達成するため

ント管理方式は、複数のクライアントがサーバにネットワークを介して接続されたネットワークシステムにおいて、各クライアントで発生する情報及びその処理の実行に伴うデータをイベントとして抽象化し、システムを構成するクライアント及びサーバでイベントを一括して管理するようにしたことを特徴としている。

【0011】また、請求項2に係るネットワークシステムにおけるイベント管理方式は、複数のクライアントがサーバにネットワークを介して接続されたネットワークシステムにおいて、各クライアントで発生する情報及びその処理の実行に伴うデータをイベントとして抽象化し、各クライアントは発生するイベントに転送先データを付加して前記サーバに送信し、当該サーバで指定された転送先クライアントにイベントを転送するようにしたことを特徴としている。

【0012】さらに、請求項3に係るネットワークシステムにおけるイベント管理方式は、各クライアントが、サーバからのイベントの転送を受けたときに、イベントを解析してこれに定義された処理を実行することを特徴としている。

【0013】
【作用】請求項1に係るイベント管理方式では、各クライアントで発生する異常情報等の情報及びこれに対する処理の実行に伴うデータをイベントとして抽象化することにより、アラーム情報等の情報とその処理等の複数の機能を同時に管理することができると共に、イベントを、システムを構成するクライアント及びサーバでイベントを一括して管理することにより、クライアント間の連携を容易にとることができる。

【0014】また、請求項2に係るイベント管理方式では、上記作用に加えてクライアント間で連携をとる場合に、一方のクライアントからイベントに転送先データを付加して、サーバに送信し、サーバで転送先クライアントに対してイベントを転送することにより、各クライアントでの処理のオーバーヘッドを削減する共に、各クライアント間でリアルタイムの連携が可能となる。

【0015】さらに、請求項3に係るイベント管理方式では、サーバからクライアントに転送されたイベントが例えばアラーム情報である場合にそのアラームメッセージの表示とこれに対する処理対象や内容の表示や対処処理等を同時に行うことができる。

【0016】
【実施例】以下、本発明の実施例を図面に基づいて説明する。図1は、本発明の第1実施例を示すブロック図である。図中、Sはサーバであり、このサーバSにLAN等のネットワークNを介してクライアントとしての監視端末11、事務端末12及び警報端末13が接続されている。

【0017】ここで、監視端末11は、フィールドバス

監視するプログラマブルコントローラ11aからのデータ受信すると、予めプログラムされた設備監視処理を実行して、設備機器の異常を検出したときに、例えば異常が発生した機器番号をイベントコードとし、これに通知先として事務端末12及び警報端末13を指定する転送先アドレスを付加してサーバSに送信する。

【0018】サーバSでは、監視端末11からのイベントを受信すると、イベント処理部10aで予め設定されたイベント処理を実行して、ロギング処理部10bに対してロギング処理を依頼し、受信したイベントデータを発生日時、発生元システム名、通知先システム名、イベントコード、イベントデータの各項目に分けてロギングすると共に、イベントに転送先アドレスが付加されているか否かを判定し、転送先アドレスがないときには、サーバ自体で所定のイベント処理を実行し、転送先アドレスがあるときには、イベントを転送先アドレスのクライアント例えば事務端末12に通知する。

【0019】事務端末12では、サーバSを経由して監視端末11からのイベントコードを受信すると、イベント処理部12aで予め設定されたイベント処理を行って予め格納されたイベント定義ファイル12bを参照してイベントコードに対応する処理内容を読出し、この処理を実行する。また、警報端末13では、サーバSを経由して監視端末11からのイベントコードを受信すると、イベント処理部13aで予め設定されたイベント処理を実行してイベント定義ファイル13bを参照して例えばブザーを鳴動させて、設備機器の異常をオペレータに報知する。

【0020】次に、上記第1実施例の動作をサーバSのイベント処理を表す図2のフローチャート及び事務端末のイベント処理を表す図3のフローチャートを伴って説明する。すなわち、サーバSのイベント処理は、図2に示すように、先ずステップS1で、監視端末11からのイベントコートを受信したか否かを判定し、イベントコードを受信しない場合には、受信するまで待機し、イベントコードを受信するとステップS2に移行して、ロギング処理部10bに対して受信したイベントデータを発生日時、発生元システム名、通知先システム名、イベントコード、イベントデータの各項目に分けてロギングするロギング処理を依頼し、次いでステップS3に移行して、受信したイベントコードに転送先アドレスが付加されているか否かを判定し、転送先アドレスが付加されているときには、ステップS4に移行して、転送先アドレスにイベントコードを転送してから前記ステップS1に戻り、転送先アドレスが付加されていないときには、自己宛のイベントコードであると判断してステップS5に移行して図示しないイベント定義ファイルを参照して、例えばプリンタによるデータの印字等の処理を獲得し、次いでステップS6に移行して、獲得した印字等の処理

5

【００２１】また、事務端末１２におけるイベント処理は、図３に示すように、先ずステップＳ１１でサーバＳからのイベントコードの転送を受けたか否かを判定し、イベントコードの転送がないときには、転送があるまで待機し、イベントコードの転送があったときには、イベント定義ファイル１２ｂを参照して、イベントコードに対応する処理即ちアラーム表示処理と異常発生位置を表すフロア図表示処理を獲得し、次いでステップＳ１２に移行して、これら処理を実行して、表示画面上にアラーム表示を行うと共に、異常発生位置を表すフロア図を表示してからステップＳ１１に戻る。

【００２２】したがって、今、監視端末１１で設備機器の異常を検出していないときには、イベントコードを発生させるとしても、単にサーバＳに対する印字要求やサーバＳ内に格納しているデータベースの検索要求等であり、他のクライアント即ち事務端末１２や警報端末１３に対してイベントを通知することはないので、監視端末１１で発生されるイベントコードはサーバＳに送信されると、このサーバＳの図２に示すイベント処理でロギング処理部１０ｂに対してロギングを依頼し（ステップＳ２）、転送先アドレスが付加されていないので、サーバＳ内でイベント定義ファイルを参照することによりイベントコードに対応した印字処理、データベース検索処理等の処理を獲得し（ステップＳ５）、これらに対応する処理を実行する（ステップＳ６）。

【００２３】ところが、監視端末１１で設備機器の異常を検出したときには、異常が発生した機器番号をイベントコードとし、このイベントコードに転送先の事務端末１２及び警報端末１３のアドレスを付加してサーバＳに送信する。このため、サーバＳでは、イベントコードを受信したときに、図２のイベント処理を実行し、ロギング処理部１０ｂにロギング処理を依頼することについては、上記と同様であるが、イベントコードに転送先の事務端末１２及び警報端末１３のアドレスが付加されているので、ステップＳ３からステップＳ４に移行し、イベントコードをそのまま事務端末１２及び警報端末１３に転送する。

【００２４】このため、事務端末１２ではサーバＳからイベントコードが転送されることにより、図３に示すイベント処理を実行し、イベント定義ファイル１２ｂを参照してイベントコードに対応する処理を獲得する。この場合、イベントコードが異常発生機器番号であるため、この異常発生機器の異常発生を表すアラーム表示処理、異常発生機器の位置を示すフロア図表示処理等の異常に対処し得る処理を獲得し、これらの処理を実行して表示画面上にアラーム表示及びフロア図表示等を行う。

【００２５】また、警報端末１３でも、サーバＳからイベントコードを受信すると、イベント定義ファイル１３ｂを参照して、イベントコードに対応する例えばブザー

6

処理を実行して、オペレータに異常発生を報知する。このように、上記第１実施例によると、監視端末１１で設備機器の異常を検出したときに、これに対応するイベントコードに転送先アドレスを付加してサーバＳに送信することにより、サーバＳでイベントコードを受信したときに、転送先アドレスが付加されていることから、ロギング処理部１０ｂにロギング処理を依頼するだけで、イベントコードを転送先にそのまま転送し、転送先でイベントコードをイベント定義ファイルを参照して解析して、所定の処理を行うので、サーバＳの負担を軽減することができると共に、各クライアント側でもサーバＳの共有ファイルを監視する必要がないので、負担を軽減することができ、システム全体のオーバーヘッドを削減することができると共に、クライアントからイベントがサーバＳに送信されると直ちにイベントが転送先クライアントに転送されるので、クライアント間の連携をリアルタイムで行うことができる。

【００２６】次に、本発明の第２実施例を図４について説明する。この第２実施例は、本発明をファクトリーオートメーションシステムにおける自動組立ラインに適用した場合を示し、例えばコンベヤにより搬送された材料を基に製品を組立てる場合を示している。すなわち、第２実施例では、図４に示すように、組立ラインの各工程毎に端末が配置されており、例えば第ｍ番目の工程に端末２１が配置されると共に、この第ｍ番目の工程に連続する第ｎ番目の工程に端末２２が配置され、これら端末２１，２２がＬＡＮ等のネットワークＮを介してサーバＳに接続されている。

【００２７】ここで、サーバＳは前述した第１実施例と同様にイベント処理部１０ａ及びロギング処理部１０ｂを有すると共に、自動組立ライン全体の組立スケジュールを管理するスケジュール管理部１０ｃを備えており、このスケジュール管理部１０ｃで組立指示等を表すイベントを端末２１に送信する。各端末２１，２２は、イベントを受信したときに、イベント定義ファイル２１ａ，２２ａを参照してイベントに対応した処理を獲得するイベント処理部２１ｂ，２２ｂを有し、このイベント処理部２１ｂ，２２ｂで獲得した処理を実行させる。

【００２８】次に、上記第２実施例の動作を説明する。今、サーバＳのスケジュール管理部１０ｃから第ｍ工程の端末２１に対して、所定の製品を組立てるための組立指示を表すイベントをネットワークＮを介して送信すると、これを受信した端末２１では、そのイベント処理部２１ｂで、イベント定義ファイル２１ａを参照してイベントに対応する例えば所定の製品の組立処理を獲得し、この組立処理を実行する。そして、所定の組立処理が完了すると、良品数等の生産データをイベントに付加すると共に、転送先を次工程である第ｎ工程の端末２２に指定して、サーバＳに送信する。

受信すると、ロギング処理部１０ａに対してロギング処理を依頼すると共に、イベントをネットワークNを介して端末２２に転送する。このため、端末２１ではサーバSからのイベントを受信したときに、イベント定義ファイル２２ａを参照して、イベントに対応する処理を獲得すると共に、イベントに付加されている生産データが動作パラメータとして与えられ、所定の組立処理が実行される。

【００３０】このように、上記第２実施例によると、自動組立ラインに配置された各端末２１，２２間でもサーバSを介して組立指示等を表すイベントをリアルタイムで転送することができ、端末２１，２２間の連携をリアルタイムで実現することができると共に、システム全体のオーバーヘッドを削減することができる。なお、上記各実施例においては、イベントとしてアラーム情報及びその処理や組立処理等を定義する場合について説明したが、これらに限定されるものではなく、複数のクライアント間で連携をとる必要がある全てのデータに対してイベントを設定することができる。

【００３１】
【発明の効果】以上説明したように、請求項１に係るネットワークシステムにおけるイベント管理方式によれば、各クライアントで発生する異常情報及び処理の実行に伴うデータをイベントとして抽象化し、システムを構成するクライアント及びサーバでイベントを一括して管理するようにしたので、情報管理とその処理等の複数の機能を同時に管理することができると共に、イベントをシステムを構成するクライアント及びサーバでイベントを一括して管理することにより、クライアント間の連携をリアルタイムでとることができるという効果が得られる。

【００３２】また、請求項２に係るネットワークシステムにおけるイベント管理方式によれば、各クライアントで発生する情報及びその処理の実行に伴うデータをイベントとして抽象化し、各クライアントは発生するイベントに転送先データを付加して前記サーバに送信し、当該サーバで指定された転送先クライアントにイベントを転送するようにしたので、システム全体での処理のオーバ

ーヘッドを削減する共に、各クライアント間での連携をリアルタイムで実行することが可能となるという効果が得られる。

【００３３】さらに、請求項３に係るネットワークシステムにおけるイベント管理方式によれば、各クライアントは、サーバからのイベントの転送を受けたときに、イベントを解析してこれに定義された処理を実行するので、サーバからクライアントに転送されたイベントが例えばアラーム情報である場合にそのアラームメッセージの表示とこれに対する処理対象や内容の表示や対処処理等を同時に行うことができ、クライアント間で転送するイベントデータを簡略化することができるという効果が得られる。

【図面の簡単な説明】
【図１】本発明の第１実施例を示すブロック図である。
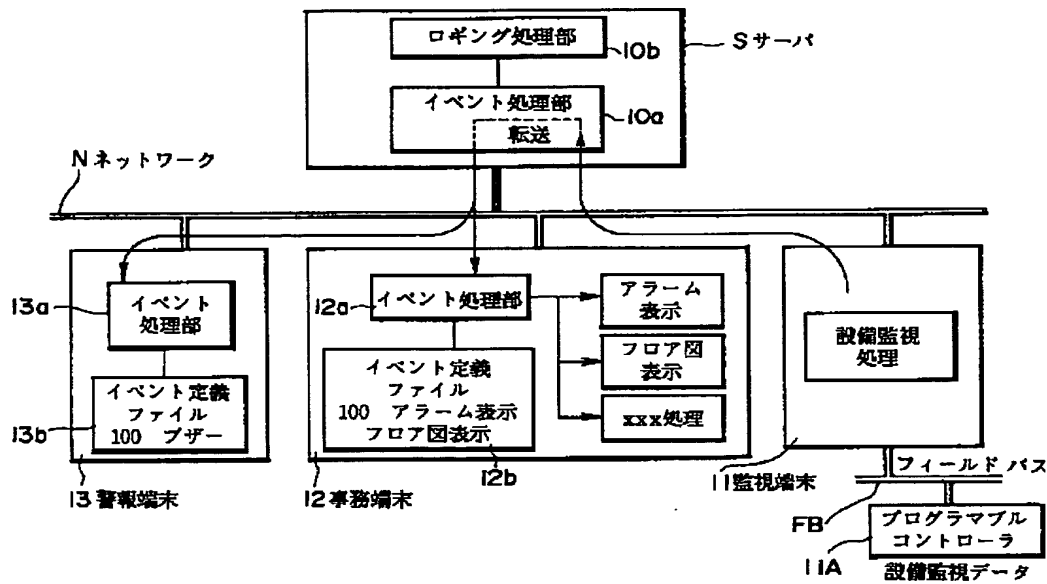【図２】サーバのイベント処理を示すフローチャートである。
【図３】事務端末のイベント処理を示すフローチャートである。
【図４】本発明の第２実施例を示すブロック図である。
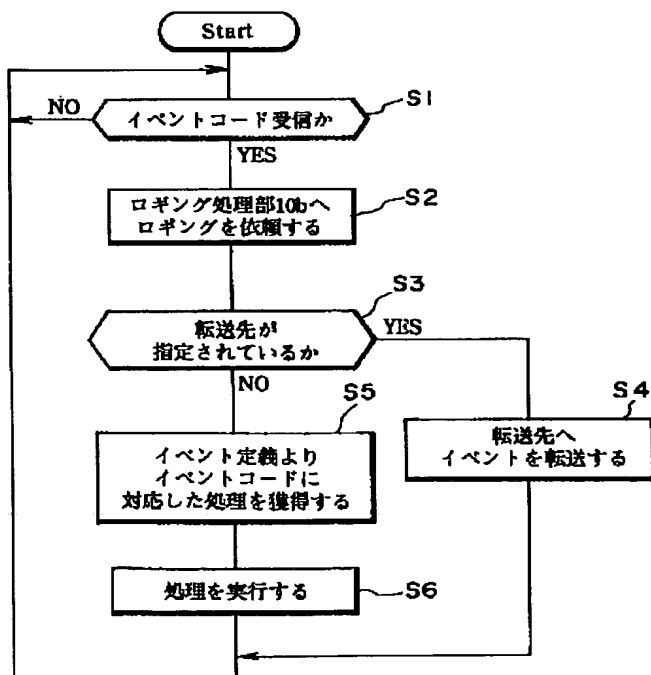【図５】従来例を示すブロック図である。
【符号の説明】
S　サーバ
１０ａ　イベント処理部
１０ｂ　ロギング処理部
１０ｃ　スケジュール管理部
１１　監視端末
１１Ａ　プログラマブルコントローラ
１２　事務端末
１２ａ　イベント処理部
１２ｂ　イベント定義ファイル
１３　警報端末
１３ａ　イベント処理部
１３ｂ　イベント定義ファイル
２１，２２　端末
２１ａ，２２ａ　イベント定義ファイル
２１ｂ，２２ｂ　イベント処理部

【図1】

【図2】

【図3】

【図4】

【図5】